

What is claimed is:

1. A hydrophilic polyester fiber bearing an aqueous mixed dispersion on the surface and made hydrophilic by being heated at 35°C or higher, wherein said aqueous mixed dispersion contains a polyester-polyether block copolymer composed of a polyester component and a polyether component and is stable at lower than 35°C and precipitates said polyester-polyether block copolymer when its dispersion state is broken by being heated to 35°C or higher.
2. The hydrophilic polyester fiber according to claim 1, wherein said polyester-polyether block copolymer comprises an aromatic dicarboxylic acid, an aliphatic dicarboxylic acid, or their ester type derivatives as an acid component and a polyoxyalkylene glycol with a number average molecular weight of 500 or higher or its derivative as said polyether component and is produced by copolymerizing 5 to 150 wt.% of said polyether component with said polyester component.
3. The hydrophilic polyester fiber according to claim 2, wherein 0.05 to 2.0 parts by weight of said polyester-polyether block copolymer is supplied to 100 parts by weight of said fiber.
4. The hydrophilic polyester fiber according to claim 1, wherein said aqueous mixed dispersion further contains an anionic surfactant and a cationic surfactant and also a

nonionic surfactant and/or an amphoteric surfactant and its dispersion state is broken by ion complex production by heating.

5. The hydrophilic polyester fiber according to claim 1, wherein said polyester fiber is made of a polyester mainly containing an ethylene terephthalate unit.

6. The hydrophilic polyester fiber according to claim 1, wherein said polyester fiber is a core-sheathed type or side by side type conjugate of two kinds of polyesters having at least 20°C difference in melting points or softening points.

7. A hydrophilic nonwoven fabric comprising a fiber web containing 20 wt.% or more of a hydrophilic polyester fiber:

wherein said hydrophilic polyester fiber is entangled by at least one entangling method selected from a needle punching method, a stitch bonding method, a thermal bonding method, and a water jet entangling method and is made hydrophilic by applying an aqueous mixed dispersion to the surface and heating to 35°C or higher: and wherein said aqueous mixed dispersion contains a polyester-polyether block copolymer composed of a polyester component and a polyether component and is stable at lower than 35°C and precipitates said polyester-polyether block copolymer when its dispersion state is broken by being heated to 35°C or higher.

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8. The hydrophilic nonwoven fabric according to claim 7, wherein said hydrophilic nonwoven fabric has basis weight of 20 to 2000 g/m² and water absorption 3 minutes after measurement by Larose method of 30 wt.% or more on the basis of the nonwoven fabric weight.

9. The hydrophilic nonwoven fabric according to claim 7, wherein said hydrophilic nonwoven fabric comprises a long fiber having the fiber diameter of 0.5 to 40 µm, containing 80 wt.% of said polyester component, and bearing said polyester-polyether block copolymer on the surface.

10. The hydrophilic nonwoven fabric according to claim 9, wherein said polyester-polyether block copolymer comprises an aromatic dicarboxylic acid, and/or an aliphatic dicarboxylic acid as an acid component and a polyoxyalkylene glycol with a number average molecular weight of 500 or higher or its derivative as the glycol component and said polyoxyalkylene glycol is copolymerized in 5 to 150 wt.% on the bases of the entire weight of the polymer.

11. The hydrophilic nonwoven fabric according to claim 9, wherein 0.05 parts by weight or more of said polyester-polyether block copolymer is supplied to 100 parts by weight of said nonwoven fabric.

12. The hydrophilic nonwoven fabric according to claim 7, wherein said aqueous mixed dispersion further contains an anionic surfactant and a cationic surfactant and also a

nonionic surfactant and/or an amphoteric surfactant and its dispersion state is broken by ion complex production by heating.

13. The hydrophilic nonwoven fabric according to claim 7, wherein said hydrophilic nonwoven fabric has basis weight of 100 to 2000 g/m² and is made of a filament subjected to needle punching process and made durably hydrophilic for civil engineering use.

14. The hydrophilic nonwoven fabric according to claim 7, wherein said hydrophilic nonwoven fabric has basis weight of 30 to 300 g/m² and is made of a filament subjected to thermal fusion to be integrated and made durably hydrophilic for filter use.

15. A method for producing a hydrophilic polyester fiber comprising steps of applying an aqueous mixed dispersion to the surface of the fiber and heating the fiber at 35°C or higher to make the fiber hydrophilic, wherein said aqueous mixed dispersion contains a polyester-polyether block copolymer composed of a polyester component and a polyether component and is stable at lower than 35°C and precipitates said polyester-polyether block copolymer when its dispersion state is broken by being heated to 35°C or higher.

16. The method for producing a hydrophilic polyester fiber according to claim 15, wherein said polyester-polyether block copolymer comprises an aromatic dicarboxylic acid, an

aliphatic dicarboxylic acid, or their ester type derivatives as an acid component and a polyoxyalkylene glycol with a number average molecular weight of 500 or higher or its derivative as said polyether component and is produced by copolymerizing 5 to 150 wt.% of said polyether component with said polyester component.

17. A method for producing a hydrophilic polyester type nonwoven fabric comprising steps of supplying an aqueous mixed dispersion, which contains a polyester-polyether block copolymer and is stable at lower than 35°C and precipitates said polyester-polyether block copolymer when its dispersion state is broken by being heated to 35°C or higher, to a nonwoven fabric containing 80 wt.% of a polyester fiber and heating the fiber at 35°C or higher.

18. The method for producing a hydrophilic polyester type nonwoven fabric according to claim 17, wherein said polyester-polyether block copolymer comprises an aromatic dicarboxylic acid, an aliphatic dicarboxylic acid, or their ester type derivatives as an acid component and a polyoxyalkylene glycol with a number average molecular weight of 500 or higher or its derivative as said polyether component and is produced by copolymerizing 5 to 150 wt.% of said polyether component with said polyester component.

19. The method for producing a hydrophilic polyester type nonwoven fabric according to claim 17, wherein 0.05 parts

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by weight or more said polyester-polyether block copolymer is supplied to 100 parts by weight of said nonwoven fabric.

20. The method for producing a hydrophilic polyester type nonwoven fabric according to claim 17, wherein said aqueous mixed dispersion contains an anionic surfactant and a cationic surfactant other than said polyester-polyether block copolymer and also a nonionic surfactant and/or an amphoteric surfactant and its dispersion state is broken by ion complex production by heating.

21. The method for producing a hydrophilic polyester type nonwoven fabric according to claim 17, wherein said nonwoven fabric containing 80 wt.% or more of said polyester fiber is produced by entangling the fiber by a water jet entangling method.

22. The method for producing a hydrophilic polyester type nonwoven fabric according to claim 17, wherein said nonwoven fabric containing 80 wt.% of more of said polyester fiber is a spunbonded type one.